

Special Primacy Requirements - Stage 1 DBPR

This section contains the special primacy requirements of 40 CFR 142.16. It specifically addresses the special primacy conditions added for implementation of the Stage 1 Disinfectants/Disinfection Byproducts Rule (Stage 1 DBPR). It addresses special primacy conditions in the same order that they occur in the rule.

VIDPNR adopted by reference the totality of 40 CFR part 141, subpart L. Subsequently the implementation of the Stage 1 DBPR is as stringent as those imposed by the NPSDWR.

1. **§142.16(h)(1):** *Section 141.64(b)(2) of this chapter (interim treatment requirements). Determine any interim treatment requirements for those systems electing to install GAC or membrane filtration and granted additional time to comply with §141.64 of this chapter.*

Under §141.64(b)(2) of the Stage 1 Disinfectants and Disinfection Byproducts Rule, a system that is installing GAC or membrane technology to comply with the MCLs for disinfection byproducts may apply to the state for an extension of up to 24 months (but not beyond December 31, 2003) for compliance with MCLs. This provision only applies to subpart H systems that serve 10,000 or more people, since all other affected systems have up to 60 months to comply.

States which grant MCL extensions will need to establish an extension condition for the requesting system. While states are only required to address how they will determine interim treatment requirements to satisfy the special primacy condition, provided below is a range of possible extension conditions for the state's consideration in granting the extension.

There are no subpart H systems (surface water systems or ground water systems under the influence of surface water) in the US Virgin Islands (USVI). The only systems which serve 10,000 or more in the USVI utilize seawater and/or groundwater. Therefore the requirements contained in this section are not applicable for the USVI.

2. **§142.16(h)(2):** *Section 141.130(c) of this chapter (qualification of operators). Qualify operators of public water systems subject to 40 CFR part 141, subpart L. Qualification requirements established for operators of systems subject to 40 CFR part 141, subpart H-Filtration and Disinfection may be used in whole or in part to establish operator qualification requirements for meeting 40 CFR part 141, if the state determines that the subpart H requirements are appropriate and applicable for meeting subpart L requirements.*

Section 141.130(c) requires that each community water system (CWS) and nontransient noncommunity water system (NTNCWS) regulated under the Stage 1 DBPR be operated by qualified personnel.

VIDPNR will develop an Operator Certification Program which follows EPA's guidelines. This program will ensure that the each community water system (CWS) and non-transient non-community water system (NTNCWS) regulated under the Stage 1 DBPR be operated by qualified personnel.

3. **§142.16(h){3}**: *Section 141. 131 (c)(2) of this chapter (DPD colorimetric test kits). Approve DPD colorimetric test kits for free and total chlorine measurements. State approval granted under §141. 74(a)(2) of this chapter for the use of DPD colorimetric test kits for free chlorine testing is acceptable for the use of DPD test kits in measuring free chlorine residuals as required in 40 CFR part 141, subpart L.*

Section 141.131(c)(2) of the Stage 1 DBPR offers states the discretion to allow systems to use DPD colorimetric test kits for measuring residual levels for chlorine, chloramines, and chlorine dioxide. The residual measurements may then be used for compliance determinations in regard to CT requirements and maximum residual disinfectant levels (MRDLs).

USVI adopts the EPA rule by reference and has determined that it will accept DPD colorimetric test kits as one of the approved methods for disinfectant residual compliance monitoring as long as the tests are performed by qualified individuals and in accordance with the equipment manufacturers' instructions. USVI will consider licensed operators or any one he/she has direct supervision over and trained as qualified to perform the analysis. DPNR certified water samplers as well as DPNR/EPA certified drinking water laboratory representative are also considered qualified.

4. **§142.16(h)(4)**: *Sections 141. 131 (c)(3) and (d) of this chapter (state approval of parties to conduct analyses). Approve parties to conduct pH, bromide, alkalinity, and residual disinfectant concentration measurements. The state's process for approving parties performing water quality measurements for systems subject to 40 CFR part 141, subpart H requirements in paragraph (b)(2)(i)(D) of this section may be used for approving parties measuring water quality parameters for systems subject to subpart L requirements, if the state determines the process is appropriate and applicable.*

Sections 141.131(c)(3) and (d) of the Stage 1 DBPR require systems to have analyses for disinfectant residuals, pH, bromide, alkalinity, UVA and TOC conducted by parties approved by the state or EPA. The approved parties could include, but would not be limited to, EPA or statecertified laboratories. In addition, the technical corrections (66 FR 3770) require daily chloride samples at the entrance to the distribution system to be measured by a party approved by EPA or the state. To achieve this, tests should be conducted by personnel who have had adequate training and experience and who are properly equipped to perform the tests.

VIDPNR considers approved parties for the purpose of compliance with this provision any DPNR/EPA certified drinking water laboratory. In cases when samples must be shipped out of the Territory any State certified drinking water laboratory (including Puerto Rico) is considered approved for the purpose of compliance with this provision. VIDPNR's state-certified drinking water laboratories must have the proper equipment and highly qualified, trained and experienced personnel for conducting analytical measurements for pH, alkalinity, residual disinfectant and TOC.

5. **§142.16(h)(5):** *Section 141. 132(a)(2) of this chapter (multiple wells as a single source). Define the criteria to use to determine if multiple wells are being drawn from a single aquifer and therefore be considered a single source for compliance with monitoring requirements.*

Section 142.132(a)(2) of the Stage 1 DBPR gives states the discretion to allow PWSs to reduce TTHM and HAA5 monitoring and associated costs by considering multiple wells drawing water from the same aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required. This provision is applicable when there are multiple treatment plants applying the same disinfectant to multiple wells drilled in the same aquifer. To qualify for the ability to make this discretionary reduction, states must establish criteria under this special primacy requirement. The criteria adopted by states should be designed to ensure that each well is indeed drawing from the identified aquifer. In addition, the finished water quality characteristics of all wells should be very similar. Thus, the water from the wells should be expected to react alike in terms of formation of disinfection byproducts.

VIDPNR has determined that it will not allow PWSs with multiple wells drawing water from the same aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required.

6. **§142.16(h)(6):** *Approve alternate minimum TOC removal (Step 2) requirements, as allowed under the provisions of 141. 135(b) of this chapter.*

Subpart H systems that use conventional filtration treatments are required to operate with enhanced coagulation or enhanced softening to achieve mandatory levels of total organic carbon (TOC) removal unless the system meets one or more of the "alternative compliance criteria" listed in §141.135(a)(2) or (a)(3) of the Stage 1 DBPR. This requirement of §141.135 is designed to provide a level of protection for unknown and/or unregulated disinfection byproducts.

Systems which cannot achieve the Step 1 minimum TOC removal requirements as presented in the table found in § 141.135(b)(2) due to water quality parameters or operational constraints must apply to the state for approval of alternative minimum TOC removal (Step 2) requirements. The applications systems make to the state for approval of Step 2 minimum TOC removal requirements must include, as a minimum, results of bench- or pilot-scale testing conducted pursuant to §141.135(b)(4)(i) of the Stage 1 DBPR. Guidance for systems conducting this testing and for states in determining how and under what conditions to approve Step 2 TOC removal requirements, is found in the Guidance Manual for Enhanced Coagulation and Enhanced Softening, USEPA, 1999.

There are no Subpart H systems that use conventional filtration treatments in the USVI. Therefore, the requirements contained in this section are not applicable for the USVI.

7. **§141.132(f) Monitoring plans:** *Each system required to monitor under this subpart must develop and implement a monitoring plan. The system must maintain the plan and make it available for inspection by the state and the general public no later than 30 days following the applicable compliance dates in §141.130(b). All Subpart H systems serving more than 3300 people must submit a copy of the monitoring plan to the state no later than the date of the first report required under §141.134. The state may also require the plan to be submitted by any other system. After review, the state may require changes in any plan elements. The plan must include the following elements:*

- (1) Specific locations and schedules for collecting samples for any parameters included in this subpart.*
- (2) How the system will calculate compliance with MCLs, MRDLs, and treatment techniques.*
- (3) If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under the provisions of §141. 29, the sampling plan must reflect the entire distribution system.*

Guidance

Section 141.132(f) requires each system to develop and implement a monitoring plan that must be performed pursuant to Subpart L. Systems must make the plan available for review by the state and public no later than 30 days following the applicable compliance dates (see § 141.130(b)). Surface water systems (including GWUDI) serving more than 3,300 people must submit a copy of their monitoring plan with their first monitoring report required under subpart L. States may require other systems to submit copies as well.

The monitoring requirements of the Stage 1 DBPR can be complex; therefore, monitoring plans should be helpful to systems in terms of ensuring compliance. Although there is no special primacy condition related to monitoring plans, EPA believes that limited guidance may be helpful to states.

In a letter dated October 10, 2002, VIDPNR requested that the Virgin Islands Water & Power Authority (VIWAPA) complies with the requirement and furthermore, recommended the monitoring plan format presented in the D/DBP Implementation Guidance. VIWAPA has submitted monitoring plans for each of its public water systems required to monitor under subpart L on March 1, 2004.

Special Privacy Requirements - Public Notification Rule 142.16(a)(2)

The United States Virgin Islands Department of Planning & Natural Resources (VIDPNR) adopts and incorporates by reference the National Primary Drinking Water Regulations in accordance with the Amendment to Title 19, Chapter 51 of the Virgin Islands Code pertaining to the Safe Drinking Water Act, dated September 25, 2001

The following are special privacy requirements that all States must respond to:

1. **§142.16(a)(2)(i)** - *Requiring public notice for violations or situations other than those listed in Appendix A of the PN Rule [141.201(a) (Table 1, item 3v)]*

VIDPNR may require public water systems to issue a public notice for situations other than those listed in Appendix A of the PN Rule, with significant potential to have serious adverse health effects from short-term-exposure. Circumstances include but are not limited to the following:

- Contamination of the water source, filtration plant and/or distribution system of a PWS by accident or act of vandalism
- Natural events and/or disasters such as heavy rains, storm, hurricanes, drought, etc.
- Public water system closure due to preventive maintenance

Evaluation of any violation or situations would be conducted by the VIDPNR on a case-by-case basis, using the potential danger to drinking water consumers as one criterion.

2. **§142.16(a)(2)(ii)** - *Limited distribution of public notice to persons served by the portion of the distribution system that is out of compliance [141.201(c)(2)]*

VIDPNR will not adopt this provision. To this extent, public water systems must distribute public notice to persons served by the entire system.

3. **§142.16(a)(2)(iii)** - *Which violations or situations require a Tier 1 public notice [141.202(a) (items 5, 6, and 8 of Table 1)]*

VIDPNR may require a Tier 1 public notice for the following violations or situations:

- Item 5: An automatic Tier 2 notice public and consultation with VIDPNR is required within 24 hours after the system learns of the violation.. VIDPNR will determine on case-by-case basis if the system should issue a Tier 1 public notice after consultation. An automatic Tier 1 public notice is required where consultation does not take place within 24 hours after the system learns of the violation.
- Item 6: An automatic Tier 2 public notice and consultation with VIDPNR is required within 24 hours of after the system learns of the violation. VIDPNR will

determine on case-by-case basis if the system should issue a Tier 1 notice. An automatic Tier 1 public notice is required where consultation does not take place within 24 hours after the system learns of the violation.

- **Item 8: Other violations or situations with significant potential to cause serious adverse health effects as a result of short-term exposure will be elevated to Tier 1 status.**

4. **§142.16(a)(2)(iv) - Requiring Additional Public Notice for Tier 1 Violations [141.202(b)(3)]**

VIDPNR may require additional notice in situations were:

1. There was inadequate, insufficient or inappropriate delivery of the initial notice;
2. New information becomes available;
3. Special populations need to be informed such as hospitals schools, day-care facilities and/or other healthcare professionals;
4. The system returned to compliance.

5. **§142.16(a)(2)(v) - Different Form, Manner, and Delivery for Tier 1, 2, and 3 Public Notices [141.202(c), & 141.203(c)], & 141.204(c)]**

VIDPNR recognizes the need to include the newspaper as an additional delivery method reasonably calculated for tier 1, 2, and 3 to reach all persons served by the system. This method is not already listed in the PN Rule.

6. **§142.16(a)(2)(vi) – Requiring Tier 2 Public Notice (Rather Than Tier 3 Notice) for Specific Monitoring or Testing Procedure Violations [141.203(a)]**

VIDPNR does not see any need for more stringency.

7. **§142.16(a)(2)(vii) – Extending the Initial Tier 2 Public Notice Distribution Deadline [141.203(b)(1)]**

VIDPNR will not adopt this provision.

8. **§142.16(a)(2)(viii) - Extending the Tier 2 Notice Repeat Frequency [141.203(b)(2)]**

VIDPNR will not adopt this provision.

9. **§142.16(a)(2)(ix) - Requiring a Tier 1 Public Notice (Rather Than Tier 2 Notice) for a Turbidity MCL Violation under §141.13(b) or a SWTR/IESWTR TT Violation Due to a single exceedance of the maximum allowable turbidity limit [141.203 (b)(3)]**

There are no subpart H systems (surface water systems or ground water systems under the influence of surface water) in the US Virgin Islands (USVI). Water systems in the USVI utilize either seawater processed by desalination or reverse osmosis, groundwater and rainwater as a source of water. These types of systems are currently

not required to comply with the monitoring requirements for turbidity and the SWTR/IESWTR. As a result, the requirements contained in this section are not applicable for the USVI.

10. **§142.16(a)(2)(x) - Multilingual Notice Requirement [141.205(c)]**

The US Virgin Islands has a significant number of Spanish speaking residents. Subsequently, on a case by case basis a water system may be required to send bilingual notifications to their customers regardless of the percentage of Spanish speaking residents which may be less than 10% in some cases. VIDPNR believes that no body should miss an important notice because of language.

Special Primacy Requirements - Radionuclide Rule

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The following are special primacy requirements that all States must respond to:

1. **§142.16(l)(1):** *Using grandfathered Data as described in Section 141.26(a)(2)(ii)(C) - To satisfy initial monitoring requirements in community water systems using a representative point in the distribution system.*

VIDPNR's criteria will be based on previous evaluations including sanitary surveys, inspections and any other technical information collected by the PWSS program. On the other hand, geological factors, as ground water components drawing from the same aquifer, and any other related information obtained from the US Geological Survey will be taken into consideration.

Information from other institutions with expertise on this matter will be evaluated, if necessary.

2. **§142.16(l)(2):** *A monitoring plan by which the State will assure all systems complete the required monitoring within the regulatory deadlines.*

Community Water systems have been notified about the monitoring requirements of the Radionuclides Rule. These systems have already monitored for the required parameters within the grandfathering regulator period. Once the results are submitted, its compliance with the monitoring requirements will be evaluated by the PWSS program.

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Section 142.132(a)(2) of the Stage 1 DBPR gives states the discretion to allow PWSs to reduce TTHM and HAA5 monitoring and associated costs by considering multiple wells drawing water from the same aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required. This provision is applicable when there are multiple treatment plants applying the same disinfectant to multiple wells drilled in the same aquifer. To qualify for the ability to make this discretionary reduction, states must establish criteria under this special primacy requirement. The criteria adopted by states should be designed to ensure that each well is indeed drawing from the identified aquifer. In addition, the finished water quality characteristics of all wells should be very similar. Thus, the water from the wells should be expected to react alike in terms of formation of disinfection byproducts.

VIDPNR has determined that it will not allow PWSs with multiple wells drawing water from the same aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required.

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Guidance

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Section VII

Emergency Operations Plan

**United States Virgin Islands
Department of Planning and Natural Resources
Division of Environmental Protection**

PUBLIC WATER SYSTEM SUPERVISION PROGRAM

SAFE DRINKING WATER

EMERGENCY OPERATIONS PLAN

Revised:
August 2008

Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

TABLE OF CONTENTS

SECTION	TITLE	PAGE
Section 1.0.	SAFE DRINKING WATER RESPONSIBILITY	1
Section 1.1.	SCOPE OF SAFE DRINKING WATER EMERGENCY OPERATION PLAN	1
Section 1.2.	POTENTIAL EMERGENCY SITUATIONS	2
Section 2.0.	PRE-DISASTER EMERGENCY PREPARATION	3
Section 2.1.	HURRICANE PREPAREDNESS	4
Section 3.0.	POST-DISASTER PROCEDURES	4
Section 4.0.	PUBLIC NOTIFICATION	6
Section 5.0.	DRINKING WATER RESOURCES INVENTORY	7-16

APPENDICES

Appendix A:	PUBLIC SERVICE ANNOUNCEMENT	17
Appendix B:	SAMPLE PRE-HURRICANE PUBLIC SERVICE ANNOUNCEMENT	18
Appendix C:	HOW TO PROTECT YOUR DRINKING WATER IN THE EVENT OF A HURRICANE OR MAJOR STORM	19-21
Appendix D:	EMERGENCY DRINKING WATER PURIFICATION PLAN	22-23
Appendix E:	SAMPLE POST-DISASTER PUBLIC SERVICE ANNOUNCEMENT	24

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

SECTION 1.0. SAFE DRINKING WATER RESPONSIBILITY

The Virgin Islands Department of Planning and Natural Resources (DPNR) assumed primary enforcement responsibility for public water systems in the Virgin Islands under the V.I. Safe Drinking Water Act and related V.I. Safe Drinking Water Rules and Regulations. DPNR's Public Water Systems Supervision (PWSS) program must adopt and implement an adequate plan for the provision of safe drinking water to the public during circumstances of emergency. This plan is part of the overall DPNR/VITEMA Emergency Operations Plan. This plan has also been submitted to the U.S. Environmental Protection Agency (EPA) pursuant to 40 Code of Federal Regulations (CFR) 142.10(e).

SECTION 1.1. SCOPE OF SAFE DRINKING WATER EMERGENCY OPERATIONS PLAN

The Safe Drinking Water Emergency Operations Plan focuses on the needs of the existing 300+ public water systems in the United States Virgin Islands in the event of emergency circumstances including, but not limited to, earthquakes, floods, hurricanes, and other natural disasters. A Public Water System (PWS) is defined as a facility that regularly serves water for human consumption to at least twenty (20) persons or eight (8) service connections at least sixty (60) days per year. The term water used for human consumption includes water utilized for drinking, bathing, showering, cooking, dishwashing, and maintaining oral hygiene. Most public water systems in the Virgin Islands are small and serve public housing units, condominiums, hotels, restaurants, schools, hospitals, offices, and commercial businesses. The majority of these obtain some or all of their water from rainwater collection/roof catchment systems and store the water in concrete cisterns. This water is generally accessed via a small horsepower pump and pressure tank. Often this rainwater source is supplemented by a metered connection to the Virgin Islands Water and Power Authority (WAPA) or by purchase of desalinated or well water from private water trucking services. Some residents keep their cisterns filled with WAPA water during dry periods when the quantity of rain water is not sufficient to meet their water needs. WAPA is increasingly becoming the primary source of potable water for many individual residents, as well as housing complexes, condominiums, businesses, and schools.

All structures built in the Virgin Islands are required by the V.I. Building Code to have a roof catchment surface and a cistern. Most private residences obtain a significant portion of their water supply from rain collected by their roof catchment system. During an emergency, water for limited domestic use can be obtained directly from the cisterns manually by using a rope and bucket. In past emergencies, where stored cistern water has become contaminated by storm flooding or overland runoff during a major storm, batch chlorination with liquid chlorine containing 5.25% sodium hypochlorite (such as Clorox) or powdered chlorine (calcium hypochloride) has been utilized by DPNR or by individual owners acting on DPNR's instructions to disinfect their water supply.

**SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN**

This Safe Drinking Water Emergency Operations Plan also provides advice and recommendations to individuals and private residences not associated with public water systems for accessing and protecting their drinking water during emergency circumstances. This includes those that depend on WAPA as their sole source of water and as a result are not considered public water systems but part of the WAPA public water system.

In an emergency or major disaster, the Virgin Islands are in a uniquely advantageous situation in that most homes and water systems have their own water supply sources. If the Water and Power Authority's water producing capability was reduced or disabled for an extended period of time, the situation would not be as critical as in places where the municipal water system is the only potable water source available. Despite this advantage, there will still be cases where safe potable water will not be directly available to the public, private homes, or public water systems. For example, homes and hotels without active cisterns or with inadequate cistern capacity, and homes where cisterns may have been damaged or contaminated by the disaster may need assistance in obtaining a potable water supply. In such cases, alternative water supplies and distribution arrangements will have to be made. This EOP also addresses the matter of finding alternative water sources for the public when the local public water systems are not capable of providing potable water in an emergency situation.

The certified laboratories in the Territory will play an important role in this emergency operations plan. DPNR will depend on these labs for testing the quality of water supplied to the public during an emergency, including imported or locally produced ice and bottled water. A list of certified laboratories and the emergency equipment they will need in order to perform water quality testing are included in this EOP.

SECTION 1.2. POTENTIAL EMERGENCY SITUATIONS

The following list represents realistic potential emergency situations that could require the implementation of this Safe Drinking Water Emergency Operations Plan in the Virgin Islands:

- 1) Hurricane or Tropical Storm;
- 2) Earthquake;
- 3) Major Fires (WAPA, HOVENSA, Landfills, etc...)
- 4) Tsunami/ Tidal Wave;
- 5) Acts of Terrorism;

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

SECTION 2.0. PRE-DISASTER EMERGENCY PREPAREDNESS

In preparation for an emergency or major disaster DPNR will implement the following measures annually:

- 1) Develop a list of alternative drinking water sources including WAPA sources, active wells, reverse osmosis (R/O) treatment facilities, and other desalination facilities that may be used to produce water during an emergency situation. If power is out, the wells and R/O systems can run on generators for periods of time to produce water. Generators and pumps may be made available through the VI Territorial Emergency Management Agency (VITEMA), the Department of Public Works, or the VI National Guard.
- 2) Inventory water tankers and trucks that can be made available to transport water during an emergency situation. DPNR has access to portable water tanks.
- 3) Obtain information on bottled water resources and the availability of water bottles from the bottled water companies for use by the public.
- 4) Develop a list of ice manufacturers that can provide ice to the public during an emergency situation. Ensure that the water sources for the ice plants are safe for human consumption. Generators may be necessary to power the ice production processes and will be made available through VITEMA and Public Works.
- 5) DPNR may develop a Memorandum of Agreement (MOA) with the VI National Guard to provide for the use of the National Guard's Reverse Osmosis Water Purification Unit (ROWPU). This unit is portable and can be used wherever needed to provide treatment for water that may have become contaminated during the emergency and requires more than disinfection to achieve safe drinking water quality. This trailer-mounted unit and a tank truck may be used to go to an emergency storage facility where the water would be treated and filtered, and pumped into a tank truck for island-wide distribution. In the event that the roads are impassable and these vehicles cannot travel, the public will be instructed to go to government buildings, churches and/or other designated places to obtain water.
- 6) Ensure that WAPA and other large public water systems maintain an adequate supply of chlorine that may be used during an emergency situation to disinfect large quantities of water for human consumption.
- 7) The Public Water System Supervision Program will prepare public service announcements (Appendix B & E) for newspaper, radio, and television, which will instruct the public on precautions to take before a hurricane; and inform and instruct the public on post-hurricane water supply issues such as chlorination, cleaning of cisterns, and locations of public water

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

supplies.

SECTION 2.1. HURRICANE PREPAREDNESS

The Public Water System Supervision Program will prepare public service announcements which will instruct the public on precautions to take before a hurricane.

A brochure entitled "How to Protect Your Drinking Water in the Event of a Hurricane or Major Storm" (Appendix C) has been prepared by PWSS. The brochure provides information on hurricane preparedness and post-hurricane water disinfection practices. The brochure will be made available to the public at locations such as US Post Offices, grocery stores, laboratories, and other public locations. The procedures that should be taken by the public immediately prior to an impending hurricane or tropical storm are listed in the brochure and include the following:

- 1) Downspouts leading to cisterns should be disconnected or blocked in order to prevent contamination of the water supply with flying debris, pollutants, and/or sea water that are transported with the storm.
- 2) A two (2) week supply of potable water should be stored in a safe weatherproof place, preferably indoors. This water supply will provide water for drinking, cooking, and bathing. To figure out how much water you will need for a two (2) week supply: multiply the number of residents by 20 gallons per person per day and then multiply that number by 14 days. For example, a family of four should store 1120 gallons of water.
(Ex: 4 people x 20 gallons/person/day x 14 days = 1120 gallons)
- 3) An adequate supply of disinfecting agents (liquid chlorine, powdered chlorine or iodine) should be on hand and stored in a safe, dry place. Remember to keep in mind the quantity of water you will have stored when figuring out how much disinfectant you will need.

SECTION 3.0. POST-DISASTER EMERGENCY PROCEDURES

Immediately after a major disaster, DPNR will determine the availability of safe drinking water supplies and/or the severity of contaminated drinking water supplies. DPNR will then prepare a status report which will outline the Virgin Islands' need for outside assistance to provide potable water to the public and describe the supplies necessary for producing potable water. The following tasks will be performed immediately after a major disaster.

- 1) DPNR will contact the Virgin Islands Water and Power Authority (WAPA) to determine:
 - a) the extent of damage to the electric generation plant and the desalination facilities;
 - b) WAPA's ability to produce safe drinking water;
 - c) the extent of contamination of the WAPA water supplies which occurred as a result of the disaster;
 - d) whether any water main breaks occurred during the disaster, and the extent of

Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

contamination which occurred as a result of the water main breaks;

- e) the amount of safe drinking water supplies WAPA has available in their storage reserve tanks;
 - e) the amount of safe drinking water WAPA would be capable of producing during the recovery period;
 - f) the availability of WAPA supplies, disinfectants, and equipment for producing safe drinking water; and
 - g) the amount of WAPA supplies, disinfectants, and equipment for producing safe drinking water.
- 2) DPNR will determine if a chemical spill occurred during the disaster which has the potential to result in contamination of drinking water supplies. If instruments such as organic vapor analyzers (OVAs) and photo-ionization detectors (PIDs) are available at the time of the emergency, DPNR will utilize these quick response screening methods in the short term to determine the location and extent of potentially contaminated drinking water sources.
- 3) DPNR will determine emergency drinking water supply locations:
- a) Work with appropriate agencies (VITEMA, National Guard, etc.) to deploy portable water tanks to central community locations. Arrange for the filling of these tanks with potable water and continuous re-filling as necessary. This may require the allocation of an emergency budget to pay for the water services and supply. DPNR will also help to ensure that these community water sources are kept properly disinfected.
 - b) Work with the appropriate agencies (VITEMA, Public Works, National Guard, etc.) to deploy generators to wells and R/O systems that may serve as safe water supplies after a disaster.
 - c) Work with the National Guard to mobilize the trailer-mounted water filtering devices. (ROWPU)
- 4) Request technical assistance from the U.S. Federal government as needed.
- 5) DPNR will notify the public of post-disaster procedures (Appendix C and D). Depending on the circumstances, the appropriate information from Section 4.0. *Public Notification* will be distributed to the public. Public notifications will be made through television announcements, radio broadcasts, newspaper notices and flyers (Appendix A).

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

SECTION 4.0. PUBLIC NOTIFICATION

DPNR will provide pre-hurricane public announcements to notify the public on actions to take to prepare for a hurricane. DPNR will also provide post-disaster (or post-hurricane) notifications to the public on the status of the disaster and the appropriate actions to take in response to the situation.

Procedures that should be taken by public water systems and individual residences prior to an impending hurricane or tropical storm to protect drinking water supplies are outlined in the pre-hurricane public service announcement (Appendix B). These pre-hurricane procedures are also listed in Section 2.1. *Hurricane Preparedness*. The pre-hurricane public service announcement will be communicated to the public via newspapers, radio, and television. The brochure "How to Protect Your Drinking Water in the Event of a Hurricane or Major Storm" (Appendix C) will be disseminated to the public throughout hurricane season (June thru October) each year. The brochure provides information on hurricane preparedness and post-hurricane water disinfection practices. The procedure for disinfecting water after a disaster, including proper dosages of liquid chlorine per volume of water will also be provided to the public (Appendix D). Other sample public service announcements are attached in Appendix E of this plan.

After a disaster, the following information will be disseminated to the public as appropriate:

- a) Locations of emergency water supplies.
- b) Safe drinking water disinfection techniques and the importance of disinfecting water sources;
- c) Locations where flyers on water disinfection methods can be obtained (supermarkets, drug stores, post office, etc.);
- d) Locations where water bottles and/or bottled water can be obtained;
- e) Laboratories available for water quality testing (i.e. bacteria, turbidity and chlorine residual);
- f) Availability of water from the WAPA reserve tanks;
- g) Schedule for the restoration of the municipal water supply (WAPA).

SECTION 5.0. DRINKING WATER RESOURCES INVENTORY

Laboratory Services:

Laboratory	Phone/Fax	Generator
Ocean Systems Laboratory Mary Lou Coulston, Ph.D. 5128 Mt. Welcome, St. Croix	(340) 773-3246 (340) 773-6829 fax	11 to 15 kW needed
WAPA - St. Croix Danny Deterville - Lab Supervisor Estate Richmond, St. Croix	(340) 773-3775 ext. 3038	10 kW needed
WAPA - St. Thomas Randa DeSuza Krum Bay, St. Thomas	(340) 774-3552 ext. 2275 (340) 775-3719 fax	40 kW, single phase, 220/110
V.I. Department of Health Laboratory Maxwell George Roy L. Scheider Memorial Hospital Sugar Estate, St. Thomas	(340) 776-8311 ext. 1059 (George)	1@ 750 kW on site 1.5 mega hertz needed 1@ 900 kW on site
Ocean Systems Laboratory Mary Lou Coulston, Ph.D. 43 Frydenhoj, St. Thomas	(340) 714-1911 (340) 777-2711 (fax)	11 to 15 kW needed

Desalinization Units:

Company	Capacity	Generator	Contact(s)	Phone
WAPA - St. Croix	IDE-3: 1.25mgd IDE-9: 1.30mgd IDE-4: 0.55mgd IDE-5: 0.55mgd	Electric generator plant on site	Gregory Rhymer Chief operating officer	773-2796
			Rupert Pelle, Super Director of Water Distribution	773-7795 ext.3066
			Kevin Smalls Super Intendent of Plant	773-3775
WAPA - St. Thomas	4.35 mgd	Electric generator plant on site	Hugo Hodge Jr Executive Director	774-3552 ext. 2001
			Gregory Rhymer, Manager of Environmental Affairs	774-3552 ext. 2016
			Mike Quetel, Superintendent of Water Distribution	775-5873 ext. 2308
WAPA - St. John (Vapor Compressor Desalination Unit)	4.47 mgd	Electric generator plant on site	Hugo Hodge Jr Executive Director	774-3552 ext. 2001
			Gregory Rhymer, Manager of Environmental Affairs	774-3552 ext. 2016
HOVENSA - St. Croix	4.5 mgd	Electric generator plant on site	Mike Bachoo Base Refinery Director	692-3144
			Kathleen Antoine Environmental Director	692-3774
RENAISSANCE PARK	300,000 gpd	Electric generator plant on site	Myron A. Allick, Site Manager VP Project Development	719-8900

Reverse Osmosis Treatment Facilities	Tel/Fax	Capacity/Cost	Generator
Southgate Gardens Robert Bergstrom # 61-A Southgate, St. Croix	513-1524	40,000 g.p.d.	75 kW on site
The Reef Condominium Paul Watson Teague Bay, St. Croix	773-9200	18,000 g.p.d.	40 kW on site 75 kW on site
Carambola Beach Resort Craig Commeau, Operator David Edgecomb, Manager Davis Bay, St. Croix	T: 778-3800 F: 778-1682	60,000 g.p.d.	750 kW on site
VI. National Guard 4 Portable R/O Units Major Charles David	T: 712-7771 F: 712-7767	8 ROWPU unit 3,000 gal/hr (can run for 20hrs)	30 -60 kW Generator Equipped
Francis Water Delivery Wilmont Francis 265 Estate Glenn, St. Croix	773-4902	30,000 g.p.d.	60 kW on site
S & S Water Services Jeff Watson # 66 Smith Bay, St. Thomas	775-2695	20,000 g.p.d. \$20/1000gal \$280/5,250gal	85 kW needed
Mahogany Run Kristian Macken # 1 North Mahogany Run Rd., St. Thomas	T: 777-6006 T: 777-6250	100,000 g.p.d.	2 @ 80kw on site 1 @ 250kw on stie
St. Thomas Dairies Fred Hintz 7-1 St. Joseph & Rosendahl, St. Thomas	777-6555	12,000 g.p.d. 60¢/gallon	Equipped with: 1 @ 400 kW 1 @ 385 kW
Chico's Distribution Frederick Larsen Linbergberg Bay #18, St. Thomas	T: 776-5894	Unknown	360 kw needed

Well Water Sources	Phone	Capacity/Cost	Generator
Emmanuel Water Service Felix Emmanuel 118 Estate Strawberry, St. Croix	778-1758	21,000 g.p.d.	27.5 kW on site
United Corp. Well Mafi Hammed 4D-4C Sion Farm, St. Croix	778-6240	4320 g.p.d.	7.5 kW on site
Krystal Springs, LLC Etheldred Christopher, Jr. 40HA Estate La Grange, St. Croix	277-2717 719-8909		
Marco Water Service Shawn Baptiste Estate Diamond, St. Croix	778-1035		
Bates' Water Service James Bates, Sr. 61-61A Estate Castle Coakley, St. Croix	778-1649		
Francis Water Delivery Wilmont Francis 256 Estate Glynn, St. Croix	773-4902	30,000 g.p.d	60 kW on site
Crown Mountain Water Gino Reginello / Paul Gemenez # 13-C Lindberg Bay, St. Thomas	777-5515	85,000 g.p.d. \$18/1000gal	100 kW needed 3 Phase on site
Pimpy's Water Rudolph Thomas # 1-Z Contant, St. John	776-6189 988-6581	6,000 g.p.d. \$5/6gallon case \$3/4 gallon case \$5/5gallon bottle	5 kw on site
S & S Water Services Jeff Watson # 66 Smith Bay, St. Thomas	775-2695	20,000 g.p.d.	85 kW needed
Virgin Beverages Davon Smiths/Clarice Joseph # 11-A Lindberg Bay, St. Thomas	776-7577 776-7577	20,000 g.p.d.	75 kW needed

Ice Company	Phone	Capacity/Cost	Generator
JK & H Enterprise Mrs. Karen Wallace Stevensen Plot # 39 Estate Cottage, St.Croix	778-8276 772-1398	5,000 lbs/day (400 bags) \$1.50/bag	75 kW needed 3 Phase 100kw needed
Henneman Ice Plant Olaf Henneman Plot #254 Est. Richmond, St. Croix	773-4140	8,000 lbs/day (1,000 bags) \$1.75/bag	90 kW needed 3 Phase (states he will close if disaster)
Jiffy Mart Adnan Rahhal Plot #8&8A Est. Richmond, St. Croix	T/F:773-4460	600-700 lbs/day (25-30 bags) \$1.50 /bag	6 Cylinder diesel on site
Abstract Ice Company Maurice Fenton Plot #49 Est. Whim, St. Croix	772-0346	10,000 lbs/day (900 bags) \$1.50/bag	40 kW needed
United Corp. Ice Plant Mafi Hammed 4D-4C Sion Farm/Plaza Extra, St.Croix	778-6240	1,000 lbs/day (100 bags) \$1.25/bag	750 kW on site
Plaza Extra II Ice Plant Mike Yusuf #14 Est. Plessen, St. Croix	719-1870	400 lbs/day (50 bags) \$1.35/8lbs/ \$2.95/20lbs	1,000 kW on site
St. John Ice Allan Johnson # 18-35 Estate Enighed, St. John	693-8825 693-5106	14,000 lbs/day \$2.50 12lbs Block/ \$3.00/20lbs \$1.75/10lb. bag	75 kW on site
St. Thomas Dairies Fred Hintz 7-1 St. Joseph & Rosendahl, St. Thomas	777-6555	20,000 lbs/day \$1.41/10lb.bag	1 @ 400kW 1 @ 385kW 1 @ 360kW

Bottled Water Companies	Phone	Capacity/Cost	Generator
Blue Mountain Purified Water Greg Schuster #18 Est. Pearl, St. Croix	778-6177	6,000 gal/day; 4,000 1-gal & 2,000 5-gal/day \$15.50 for 1st bottle; \$3.50 for refills	80 kW on site
Caledonia Springs Peter. Chiang 2F Est. La Reine, St. Croix	778-1281	3,500 gal/day; 200 5-gal & 500 1-gal/day@\$0.80 each \$4.00 refill 5-gal &	20 kW needed
Paradise Bottling Standly Christian 17C Hogenberg, St. Croix	692-5855 692-2885 771-4003	1,400 gal/day 2,000 cases/day \$6.00/case (24 bottles)	500 kW needed
Paradise Purification Edwardo Gomez 36 Est. Paradise, St. Croix	692-6745	2000 gal/day 40 5-gal & 500 1-gal/day \$2.80/case (4 bottles)	10,000 kW on site
Purified Water James Hamilton 57 Castle Coakley, St. Croix	778-7551 773-8785	1,000 gal/day 25 5-gal & 1,000 1-gal/day \$0.75 per gallon	6,500 kW on site 15,000 kW needed 12.5kw needed
St. John Ice Allan Johnson # 18-35 Estate Enighed, St. John	T/F:693-8825	1,000 gal/day 40 5gal & 400-800 1-gal/day \$1.00 per gal	75 kW from ice plant
Crown Mountain Paul Gemenez 13-C Lindberg Bay, St. Thomas	777-5515 988-3118	500-1000 gal/day 400-500 5gal bottles/day \$6.00-6.50 per 5-gal bottle	75kW needed
Natural Source Water Walid Abdallah 13-C Lindberg Bay, St. Thomas	T/F: 777-1224	3,000 gal/day 3,000 1-gal bottles/day 1 case (6-bottles) @ \$6.00	generator needed But unknown KW 10 kw needed
Paradise Water/Pimpy's Rudolph Thomas #1-Z Contant, St. John	T:776-6189 F:776-6976	600 gal/day; 48 cases of 1 gal/day 6 bot/case; \$5.50 per case \$5.00 ea.for 10 or more cases	5kW on site
Pure Tropical Water Florie McGrass 56 Komprindsens Gade, St. Thomas	776-4245	1,000 gal/day; 200 5-gal/day \$13.00 for first bottle \$0.50 for refills	one is on site but unknown kW

Bottled Water Companies	Phone	Capacity/Cost	Generator
Virgin Beverages Gary Joseph or Clarice Joseph #11-A Lindberg Bay, St. Thomas	T:776-7577 F: 776-7114	15,000 gal/day 1,000 1-gal cases/day 75 5-gal/day; 1-gal case (6 bottles) @ \$5.00-7.00; 3-gal bottle \$3.50-4.50 5-gal bottle \$5.50-6.00	75 kW needed
Chico Distributin, LeBleu Frederick Larsen #18 Lindberg Bay, St. Thomas	T: 774-5494 T: 776-5894 F: 7765854	1,152 5-gal/day; 1case (24-12oz-bottles) @ \$10.95; 1case (24-20oz-bottles) @ \$12.95; 1case (12-33.8oz-bottles) @ \$12.95; 1case (12-50.7oz- bottles) @ \$13.95	100 KW on site
Krystal Spring's LLC Etheldred Christopher, Jr. Plot# 40HA Estate La Grange	277-2717 719-8909	250-1 gallon per day@\$1.25 25-5 gallon per day @ \$2.50 (container not Included)	5 KW needed (For well only)
Virgin Krystal Neal Canton Plot #7C Sally's Fancy	773-2810	1 gallon(1200 bottles per day @ \$1.00) 3 gallon (100 bottles per hour @ \$4.00) 5 gallon (80 bottles per hour @ \$5.00)	25 kW needed

Water Truck Company St. Croix	Contact	Location	Phone	Truck(s) Capacity (U.S. Gal)	DPNR ID #	Current V.I. Plate
Bates' Water Deliver	James Bates	Plot #61-61A Estate Castle Coakley	778-1649 277-054	3,000	VI005C	XDA-208
				3,000	VI041C	XDB-392
Carino Water Service	Anastacio Carino	Plot 13W & 13X Estate Bethlehem	778-3118	5,000	VI004C	CDN-653
Carter's Water Service	Douglas Carter	Plot # 64DEstate Whim	772-2763	4,000	VI009C	XDA-282
Country Water Service	Mohammad Hannum	Plot #20 Estate Mary's Fancy	778-2395 690-0472	3,100	VI012C	XDA-324
D & G Water Services	D. Williams & G. Laurent	Plot #70 Estate Grove Place	626-7319 514-8043 690-9078	3,500	VI045C	XDA-119
E. Hamilton Water Service	Edgar Hamilton	Plot #34H Estate Clifton Hill	778-3475	2,600	VI033C	XDA-238
Emmanuel Water Service	Felix Emmanuel	Plot #118 Estate Strawberry Hill	778-1758	3,150	VI011C	XDB-398
Estridge Water Service	James Estridge	Plot #69 Estate Rattan	778-4666	2,900	VI002C	CCR-883
Francis Water Service	Wilmoth Francis	Plot #256 Estate Glenn	773-4902	3,100	VI006C	CDN-038
				6,000	VI007C	XAA-933
G & T Water Delivery	Gary Thomas	Plot #129 Estate Castle Coakley	778-6090	4,000	VI027C	XDA-209
Gideon Water Service	Gideon Small	Plot #89 Mahogany Welcome	773-2728 771-8455	3,000	VI039C	XAA-714
Harry Hodge II Water Delivery	Harriette Hodge	Plot #2 Estate Paradise	772-4527	4,200	VI036C	XAA-763
Just Right Trucking	Mitchell Matthew, Sr.	Plot #38 Estate Cottage	473-9907	3,000	VI054C	XDA-140
Krystal Spring, LLC	Etheldred Christopher	Plot #40HA Estate La Grange	277-2717 719-8909	4300	VI048C	XAA-517
				3000	VI017C	XDA-051
L & C (Dan's Trucking)	Lloyd Daniel	Plot #1-I Estate Slob	778-1948	3,700	VI032C	XAA-725
Marco Water Service	Shawn Baptiste	Plot #222-223 Estate Kingshill	778-1035	3,300	VI016C	XDA-199
				4,300	VI019C	CDR-975
				5,300	VI038C	XDA-059
				5,300	VI051C	XDA-147
Mario's Water Service	Mario Canton	Plot #7C Estate Sally's Fancy	773-2810	2,700	VI013C	XAA-929
				3,300	VI018C	XAB-072
				3,600	VI053C	XAC-010
O' Neale's Transport	Keith O'Neal	New Container Port	778-1111	3,500	VI026C	CDG-043
				10,000	VI035C	CBB-703

Water Truck Company St. Croix	Contact	Location	Phone	Truck(s) Capacity (U.S. Gal)	DPNR ID #	Current V.I. Plate
Orlando Water Service	Orlando Carino	Plot #124 Estate Whim	473-6370	4,100	VI001C	XDB-420
Paradise Purification	Edwardo Gomez	Plot #10 Estate Rattan	692-6745	3,500	VI046C	XDA-100
Parris Water Delivery	John A. Parris	Plot #53C Estate Grove Place	692-1376 514-7459	3,200	VI003C	XDA-325
Schuster's Water Service	Kenneth Schuster	Plot #18 Estate Pearl	778-6177	3100	VI022C	XDA-330
				7,500	VI023C	YDA-202
				3,100	VI024C	XDA-355
				3,100	VI040C	XDA-356
				9,400	VI055C	YDA-203
				9,400	VI056C	YDA-204
West End Water Service	Louisa Petersen	Plot #F2 Estate Two Williams	772-3380	3,000	VI028C	CCJ-464

Water Truck Company St. Thomas/St. John	Contact	Physical Location	Phone	Truck(s) Capacity (U.S. Gal)	DPNR ID #	Current V.I. Plate
Bastian & Son Trucking	Wayne Bastian	9-DB Contant	775-4223	4,200	VI073T	TCS-354
			690-9414			
Bobby Diamond Water Delivery, Inc.	Linton Rabsatt, Sr.	6024 FRYDENHOJ #2	775-6579	2,000	VI078T	TDN-453
			643-0190			
Callwood Water Service	Clifford Callwood	#27 Altona	776-9283	3,300	VI035T	XDA-762
				5,250	VI036T	XDA-926
Chuck Kline Water Service	Steve Bailey	# 51-51A Subbase	774-7456	5,250	VI030T	XDA-687
			513-3000			
Courtesy Water Service	Michael Dixon	# 67 Subbase	776-5761	5,250	VI028T	XDA-920
			513-2689			
Dadlie's Trucking & Water Delivery	Novelle Joseph	#33 Subbase	775-1300	5,250	VI034T	XDA-522
				3,000	VI059T	XDB-350
			690-1300	5,250	VI069T	XDA-525
				5,250	VI071T	XDA-653
				5,250	VI083T	TDS-383
Discount Trucking	James Bryan	#18 Altona	776-1298	3,500	VI001T	XDA-980
				5,000	VI007T	TDP-720
				5,000	VI064T	XAC-786
E & L Water, Inc.	Evard Petersen	#9-BB Contant	998-3782	3,795	VI077T	XDA-893
Elite Water Delivery	Dean A. Martin	#33 Nisky	776-5579	3,750	VI042T	TDD-028
			642-9637			
ELR CON & ELE Hms & Design	Evans Frett	#57-7 Smith Bay	771-1106	2,860	VI075T	XDA-915
Express Water Delivery	Arthur Paris	#4c Estate Enighed St. John	779-4773	4,200	VI012J	XDA-750
			690-2618	4,150	VI019J	XDA-596
F & F Water Delivery	Heigel Farrell	# 18C Nisky	776-2620	5,310	VI003T	XDA-908
				5,310	VI082T	XDA-718
Grapo Water Delivery	Michille Turnbull	#18 Nisky	473-2882	3,250	VI050T	XDA-900
Fleming's Trucking	Geoffrey Fleming	#148-141 Est. Tutu	775-9420	2,100	VI072T	TCW-427
			690-9555			
H & V Heavy Equipment	C. Sookram	# 6076 Smith Bay	775-2695	5,250	VI043T	XDA-785
			626-1823	5,250	VI044T	XDA-538
			643-2430			

Water Truck Company St. Thomas/St. John	Contact	Physical Location	Phone	Truck(s) Capacity (U.S. Gal)	DPNR ID #	Current V.I. Plate
Henry's Trucking	Henry Boyd	# 1WE-1 Estate Bethany, St. John	779-4977	4,200	VI017J	XDA-744
				3,500	VI053J	XDA-718
Housing, Park & Recreation	Mario Turnbull	# 8201 Subbase, Suite 206	774-0255	4,000	VI040T	HP&R-47
John John's Water Services & Water Delivery	Alejandro Caraballo	#4 Frydendahl	244-5770	5,000	VI080T	XDB-308
Lake's Water Service	George Lake	11B-4 Frydendahl	775-1977	3,800	VI074T	TCP-501
			771-7188	5,000	VI084T	TDU-072
M & M Water Delivery	Lee Thomas	# 4C Enighed, Cruz Bay, St. John	690-2405	5,000	VI016J	XDB-300
			693-7320			
Monsanto Enterprise, LLC-Truck	Kirt Monsanto	#3B Enighed, Cruz Bay, St. John	690-1104	1,200	VI065J	JAL-156
N2N Water Delivery	Jinez Ashby	#15-A Bovoni	776-1132	5,250	VI052T	TDL-333
			998-9539			
Oasis Water	Lyndal Anthony	# 4C Enighed, Cruz Bay, St. John	776-6720	5,500	VI070J	XDA-583
			513-0150			
Penn's Trucking Services	Andrew Penn	# 18-48 Estate Enighed, St. John	776-6530	3,000	VI013J	XDA-582
			690-6634			
Peter Francis Water Delivery	Peter Francis	# 3-F Estate Brookman	775-6354	1,000	VI026T	XDA-641
				1,750	VI027T	XDA-601
Pimpy's Trucking Services	Rudolph Thomas	#1 Contant, St. John	776-6189	3,000	VI066J	XDB-259
Powells Property Maintenance	Dennis A. Powell, Sr.	#144 Enighed, St. John	776-0921	1,200	VI081J	TCR-130
Prestige Water Delivery	John Griffin	#9-14 Glucksberg, St. John	776-2699	5,500	VI068J	XDA-843
			514-3521			
Resort Water Services	Eustace Elmes	#33-B Contant	775-1421	3,550	VI037T	XDA-794
			690-4487			
Six Pack I	Alvin Whyte, Jr.	#16-62 Frenchman's Bay	776-4351	2,000	VI049T	XDA-954
St. John Maintenance Co.	Maxentius Griffith	#63 Chocolate Hole St. John	779-4222	4,300	VI018J	XDA-948
			643-5218	4,200	VI062J	XDA-743
Suad Salem	Suad Salem	#42 Upper John Dunkoe	776-3400	4,100	VI067T	XDA-868
			690-4130			
Tony's Water Delivery	Antonio Enrique	#140-1 Hospital Ground	776-4158	4,250	VI033T	XDA-534
			771-5748			

Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX A:

MEDIA SERVICES

Company Name	Media Type	Telephone No.(s)	Fax Number(s)
WSVI Channel 8	T.V. Station	778-5008	778-5011
WTJX Channel 12	T.V. Station	774-6255 773-3337	774-7092 773-4555
T.V. 2	T.V. Station	774-2200 ext. 224	714-2970
Innovative Cable TV	T.V. Station	778-6701	778-6011
Isle 95	Radio Station	773-3636 773-0995	773-9093
Radio 1 WVWI AM 1000	Radio Station	776-1000	776-5357 776-8988
KISS 101.3 WWKS FM	Radio Station	776-1013	776-5357 776-8988
WSTX AM/FM	Radio Station	773-0490 773-0390	773-8515
WRRR 1290	Radio Station	778-1290	778-1686
WSTA 1340	Radio Station	774-1340	776-1316
WVJZ 105.3	Radio Station	776-5260	776-5357 776-8988
Paradise 93.5 FM-WYAC	Radio Station	773-5935	719-1800
St. Croix Avis	Newspaper	773-2300	773-5511
Daily News	Newspaper	773-4424 774-8772	773-1621 776-0740

Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX B:

SAMPLE PRE-HURRICANE PUBLIC SERVICE ANNOUNCEMENT

The Commissioner of the Department of Planning and Natural Resources (DPNR) advises the public to complete the following tasks to protect your drinking water resources in preparation for an impending hurricane disaster and the resulting potential water resources emergency:

- 1) Downspouts leading to cisterns should be completely disconnected or blocked securely to protect the water source.
- 2) A two (2) week supply of potable water should be stored in a safe weatherproof place, preferably indoors. This water supply will provide water for drinking, cooking, and bathing. To figure out how much water you will need for a two (2) week supply: multiply the number of residents by 20 gallons per person per day and then multiply that number by 14 days. For example, a family of four should store 1120 gallons of water.
(Ex: 4 people x 20 gallons/person/day x 14 days = 1120 gallons)
- 3) An adequate supply of disinfecting agents [liquid chlorine containing 5.25% sodium hypochlorite (i.e. Clorox), powdered chlorine (active ingredient calcium hypochloride) or iodine] should be on hand and stored in a safe place.
- 4) A supply of sterile potable water bottles and other suitable containers should be secured to store water.
- 5) A list of emergency water supplies should be obtained from the Division of Environmental Protection of DPNR at Cyril E. King Airport, Terminal Bldg. 2nd Floor, Charlotte Amalie on St. Thomas or #45 Mars Hill, Frederiksted on St. Croix.

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX C:

HOW TO PROTECT YOUR DRINKING WATER IN THE EVENT
OF A HURRICANE OR MAJOR STORM

How to Protect Your Drinking Water



in the Event of a Hurricane or Major Storm

Preparing for a Major Storm or Hurricane.



The Commissioner of the Department of Planning and Natural Resources (DPNR) advises the public to protect your drinking water resources by preparing for an impending tropical storm or hurricane in the following manner:

- ◆ Disconnect or block downspouts leading to cisterns to protect your water source.
- ◆ Have a two-week supply of clean water. An average person needs to drink at least two quarts of water each day. You will also need clean water for preparing food and hygiene. If a cistern is not available, store 20 gallons of water for each person.
- ◆ Have an adequate supply of disinfecting agents on hand (i.e. liquid bleach, THT pool chlorine, or iodine). Determine how much liquid bleach you will need from the table on the back of this pamphlet.

Storing Water. Store water in thoroughly washed plastic, glass, or fiberglass containers. Never use a container that has held toxic substances. Plastic containers, such as soft drink bottles, are best. Seal water containers tightly, label them and store in a cool, dark place.

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX C:

HOW TO PROTECT YOUR DRINKING WATER IN THE EVENT
OF A HURRICANE OR MAJOR STORM - continued

As You Begin Your Post-Hurricane Cleaning, Don't Forget to Consider Your Water Supply.

During a storm or hurricane, you may be cut-off from WAPA water or your cistern water may get contaminated. In addition to having a bad odor, taste or color, contaminated water can contain microorganisms that cause stomach illnesses, skin rashes, and even typhoid. After all major storms and hurricanes you should disinfect your cistern water, even if it contains WAPA water, trucked-in-water, or ground water. You can also get a list of emergency water supplies from the

Department of Planning and Natural Resources
Division of Environmental Protection
at
45 Mars Hill, Frederiksted
St. Croix, V.I. 00840-4474
773-1082
or
Cyril E. King Airport
Terminal Bldg., 2nd Floor
St. Thomas, V.I. 00802
774-3320



Cistern Disinfection.

Materials Needed:

- ◆ Liquid Bleach that contains 5.25% sodium hypochlorite (i.e. brand name - Clorox).
- ◆ Measuring Cup
- ◆ Clean Bucket and Rope
- ◆ Measuring Tape

Directions:

- ◆ Determine the amount of water in your cistern (in gallons). First, measure the cistern's length and width (in feet), and the depth of the water (in feet). Multiply these numbers together, and multiply the product by 7.5.

$$\text{Gallons of Cistern Water} = \text{Length} \times \text{Width} \times \text{Depth} \times 7.5$$

- ◆ Measure appropriate amount of liquid bleach (on back of pamphlet) into bucket and fill with water.
- ◆ Tie rope to clean bucket. Rope should be long enough to reach below water surface.
- ◆ Lower bucket into cistern several times to distribute liquid bleach throughout cistern. Do not disturb sediment on floor of cistern.
- ◆ Allow water to stand for four hours after chlorination. Check water for chlorine residual (between 0.5 and 1.0 ppm). A pool kit or a chlorine residual kit can be used.

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX C:

HOW TO PROTECT YOUR DRINKING WATER IN THE EVENT
OF A HURRICANE OR MAJOR STORM - continued

Purifying Small Quantities of Water.



Water collected in small quantities should be purified before drinking. Four methods for purifying small quantities of water are described below.

◆ **Boiling.** Bring water to a rolling boil for 3- 5 minutes. Let water cool before drinking or storing. To improve the taste of boiled water, you can re-oxygenate it by pouring the water back and forth between two clean containers.

◆ **Disinfection.** Add 8-10 drops of household liquid bleach that contains 5.25% sodium hypochlorite to one gallon of water. Mix well and let stand for 30 minutes before drinking.

◆ **Disinfection.** Add 2 drops of 2% tincture of iodine to one quart of water. Mix well and let stand for 30 minutes before drinking. Prolonged use (more than 2-3 days) of iodine for disinfecting water is not recommended.

◆ **Distillation.** Fill a pot halfway with water. Tie a cup to the handle of the lid of the pot so that the cup hangs upright when the lid is placed on the pot upside-down. Make sure the cup does not touch the water in the pot. Boil the water for 20 minutes. The water in the cup after boiling is distilled and will not contain salt or other impurities.

How much chlorine to use:

Adding liquid bleach to your cistern water is an effective way to kill microorganisms. Use only regular household liquid bleach that contains 5.25% sodium hypochlorite. Do not use scented bleaches, colorsafe bleaches or bleaches that have added cleaners.

Gallons of Cistern Water	<u>Liquid Bleach:</u> Cups	Ounces
1,000	4/5	6
5,000	3 3/4	30
10,000	7 1/2	60
15,000	11 1/4	90
20,000	15	120
25,000	18 3/4	150
30,000	22 1/2	180
40,000	30	240

Chlorinating your cistern water also prevents breeding of mosquitoes and other insects and animals that breed in water.

Reminder: After every excessive rainfall, you should rechlorinate your cistern water supply using the directions provided in this pamphlet.

Don't let yourself get bugged because
you weren't prepared *before* the storm.



Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX D:

EMERGENCY DRINKING WATER PURIFICATION PLAN

I. Cisterns

Cisterns should be chlorinated by placing six (6) fluid ounces of liquid chlorine containing 5.25% sodium hypochlorite (i.e. Clorox) for every 1,000 gallons of water into the cistern. The chlorine must be given enough time to disperse in the cistern and inactivate the bacteria prior to water use. The amount of chlorine contact time will vary with the size of the cistern. It is recommended that a period of at least six (6) hours per 10,000 gallons is allowed before water consumption occurs. Slight agitation of the surface water in the cistern will aid in chlorine dispersement. However, avoid excessive agitation so as not to stir up sediment on the floor of the cistern. Six (6) hours after chlorination the water should be checked for free chlorine residual. This can be done with a pool kit or a chlorine residual kit by the owner or operator of the cistern or by DPNR. The following individuals will be available to test water supplies for chlorine residual concentrations:

Mr. Efrain Hatchette
Public Water Systems Supervision Program, Environmental Specialist III
Department of Planning and Natural Resources
Division of Environmental Protection
Cyril E. King Airport, Terminal Bldg. 2nd Floor
St. Thomas, USVI 00802
Phone (340) 774-3320 Ext. 5155

Mr. Michael Diaz
Public Water Systems Supervision Program, Environmental Specialist III
Department of Planning and Natural Resources
Division of Environmental Protection
45 Mars Hill, Frederiksted
St. Croix, USVI 00840
Phone (809) 773-1082 Ext. 2283

Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX D:

EMERGENCY DRINKING WATER PURIFICATION PLAN - continued

II. Smaller Quantities of Water

Water collected in small quantities should be stored in a sterilized sealed, preferably glass container, which has previously held only drinking water. This water may be utilized for drinking if:

- 1) it is boiled for at least four (4) to six (6) minutes. Pour immediately into a sterilized (clean) glass or plastic container and cover with a screw cap. Refrigerate if possible after cooling.
- 2) eight to ten (8 to 10) drops of liquid bleach containing 5.25% sodium hypochlorite (i.e. Clorox) are added for each gallon of water. The bottle should be well mixed (shaken); allow thirty (30) minutes to elapse before consuming.

Department of Planning and Natural Resources
Division of Environmental Protection
Public Water System Supervision Program

SAFE DRINKING WATER
EMERGENCY OPERATIONS PLAN

APPENDIX E:

SAMPLE POST-DISASTER PUBLIC SERVICE ANNOUNCEMENT

The Commissioner of the Department of Planning and Natural Resources (DPNR) advises the public of the following important drinking water information in this current state of emergency:

- 1) Emergency drinking water supplies for the public are available at the following locations:
(Add in locations)

- 2) Water disinfection techniques:

Cisterns should be disinfected by adding six (6) fluid ounces of liquid bleach containing 5.25% sodium hypochlorite (i.e. Clorox) for every 1,000 gallons of water into the cistern. A period of at least six (6) hours per 10,000 gallons should be allowed for the chlorine to react with the water before the water is consumed. Smaller quantities of water may be utilized for drinking if boiled for at least four (4) to six (6) minutes or sterilized with eight to ten (8 to 10) drops of liquid chlorine, containing 5.25% sodium hypochlorite, per gallon of water.

Flyers on detailed water disinfection methods can be obtained at all local supermarkets, drug stores and post offices. ***(Add any other appropriate facilities)***.

- 3) Water bottles and/or bottled water can be obtained from ***(list locations)***
- 4) Limited quantities of water are available from WAPA from the reserve located at ***(list location(s))***. WAPA can be contacted directly to obtain a supply of this water. ***(Schedule for the restoration of municipal water (WAPA) if available)***

